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A Perspective on Medical Expertise

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The Interactive Videodisc

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Selecting a Residency Program

Residents' Attitudes about Diabetes

Initial Encounter with a Cadaver

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Scientific Writing Courses

Students' Procedural Skills

National Policy Perspectives

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A National Survey of Grading Systems Used in Medicine Clerkships

GREGORY J. MAGARIAN, M.D., and DENNIS J. MAZUR, M.D., Ph.D.

Abstract—To better understand the variety in U.S. medicine clerkship grading terminology, the number of grading levels, and the distribution of grades within each level, the authors surveyed medicine clerkship directors in the United States and Puerto Rico in 1986 and 1987. Completed questionnaires were returned from 101 of the 124 medical schools (81%). Descriptor grades were the most commonly used form of grading of medicine clerks, used in 68 of the 101 responding schools; letter grades were used by another 28 of the schools; and four schools used a numerical grading system. Although descriptor grades were most commonly used for grading medicine clerks, there was lack of consistency in their use between schools. The authors discuss the data related to letter grades and descriptor grades across this representative sample of U.S. medical schools. *Acad. Med.* 65(1990):636–639.

Clerkship grades have several major effects. First, grades provide feedback to students regarding their levels of performance. In many respects, grades provide incentives for students to give their best efforts when there is reason to believe that such efforts will be recognized. In this regard, the designation of terms to describe grades is probably not critical, since students are already aware of the various tiers in the grading system and, therefore, where their grades fall. Second, grades provide feedback to the department and school regarding how well students are performing. Finally, grades in specific clerkships may have a strong influence on students' competitiveness toward obtaining the housestaff positions of their choice.[1-3]

Of major concern to third-year clerks facing career decisions are the effects their grades have in marketing them as housestaff candidates. On the other hand, a medicine housestaff program director must also attempt to understand the meaning of grades from a particular institution and clerkship relative to grades from other schools when preparing rank order lists in choosing applicants for internships.

The purpose of this study was to survey medicine clerkships of the United States and Puerto Rico to determine the variability in grading terminology used, the number of grading levels used, and the distribution of grades within each level in each institution.

Method

Survey questions were sent to medical school chairpersons of 124 departments of medicine in the United States and Puerto Rico in 1986–1987. Each was requested to give the questionnaire to the medicine clerkship director or individual otherwise most responsible in coordinating the medicine clerkship. The questionnaire asked for the type of grading system used, offering four choices: (1) honors, pass, marginal, and fail; (2) honors, pass, or fail; (3) A, B, C, and F; or (4) other, in which case the clerkship director was asked to specify the grading system. Second, the clerkship director was asked to delineate the distribution of grades given for each level within the grading structure. The questionnaire also asked whether one or more grades to distinguish clinical skills and knowledge were recorded on a student's transcript. Those using a grading system without an intermediate level between the highest level and the mid-level were asked whether they felt their grading system hindered the above-average performer whose final evaluation grade otherwise appeared identical to the grade given to those who performed at lower levels but who yet received passing grades.

Results

Questionnaires were completed and returned from 101 of the 124 medical schools (81%). Grades based on descriptors such as honors-pass or outstanding-satisfactory were used by 68 schools. Letter grades were assigned by 28 schools, and numerical rankings by four schools. Information on

Dr. Magarian is director of the medicine clerkship and associate professor, and Dr. Mazur is associate director of the medicine clerkship and assistant professor; both in the Department of Medicine, Oregon Health Services University, Portland. Both authors are also staff physicians in the Section of General Internal Medicine, the Portland Veterans Administration Medical Center, Portland, Oregon.

Correspondence and requests for reprints should be addressed to Dr. Magarian, VA Medical Center (111-P), 3710 SW US Veterans Hospital Road, P.O. Box 1034, Portland, OR 97207.

Table 1

Number and Percentage of 28 Medical Schools Using Each Letter Grade, within Each Tenth-Percentile Grouping of the Clerks Given Each Grade, 1986–87*

Percentile Grouping of Clerks Given Grade	Number and Percentage of Schools Using Each Grade									
	A		B		C		D		F	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–10	3	11.5	0	0	8	29.6	5	100	27	100
11–20	15	57.7	0	0	9	33.3	0	0	0	0
21–30	4	15.4	3	11.5	5	18.5	0	0	0	0
31–40	2	7.7	2	7.7	2	7.4	0	0	0	0
41–50	1	3.8	5	19.2	0	0	0	0	0	0
51–60	0	0	4	15.4	0	0	0	0	0	0
61–70	0	0	8	30.4	0	0	0	0	0	0
71–80	1	3.8	4	15.4	1	3.7	0	0	0	0
81–90	0	0	0	0	0	0	0	0	0	0
91–100	0	0	0	0	0	0	0	0	0	0
Total	26		26		25		5		27	
Unknown	2		2		2		0		0	
No. schools not giving grade	0		0		1		23		0	

*The authors surveyed medicine clerkship directors at 124 U.S. and Puerto Rican medical schools and received completed questionnaires from 101. Letter grades were used by 28 of the 101 responding schools, as analyzed in the table.

the use of numerical grades was not analyzed further.

Letter Grades

Letter grades were used by 28 of the 101 responding schools. When letter grades were used, their distributions of use where A's—19%, B's—56%, C's—19%, D's—4% (when used), and F's—2%. Only five (18%) of these 28 schools using letter grades indicated the use of the letter grade D. All indicated they had a failing-grade designation of F; however, ten (36%) indicated not recalling having given this grade. The highest failure rate for a class of medicine clerkships reported was 10% (two schools).

Table 1 analyzes letter-grade distributions within each tenth-percentile grouping of the clerks given each grade. Only two schools reported giving more than 37% of their medicine clerks A's. Similarly, only three of the 25 schools using letter grades from whom grade distribution data were obtained (12%) reported giving C's to more than 30% of their clerkship students. B's were clearly the predominant grade given. In only two of 25 schools were more C's given than B's. Both of these schools specifically noted that letter grades were subcategorized into pluses and minuses (for example, A+, A, A−).

Descriptor Grades

Descriptor grades were used by 68 schools. The distribution of grades indicative of various levels of performance is provided in Table 2.

Various terms were used to name the descriptor grades. Of the 68 schools using such grades, the highest level of grade was called (in descending order): honors, by 57 schools; outstanding, by four; high honors, two; pass, two; superior, two; and high pass, one. Grades at this level, but above "pass" (66 schools), were awarded to 14% of the students in the 62 schools from which sufficient data were obtained to make this determination. Among those indicating use of this grade designation, the lowest frequency of its use was 3% (two schools) and the highest was 30% (one school), with only 11% of such schools awarding this grade to more than 20% of a class.

Second-level descriptor grades between the highest awarded grade, such as honors, and a grade indicating acceptable performance but without distinction, were used by 26 (38%) of the 68 schools using descriptor grades. In order designated, they were high pass (16 schools), excellent (three), high satisfactory (three), near honors (two), above average (one), and above expected competence (one). The average percentage of students receiving a second-level grade was 32% in the 24 of 27 schools using such a grade for which sufficient information was available to determine frequency of use. In 63% of these 24 schools giving a second-level, intermediate grade, it was awarded to 30% or less of their student clerks. Only one school gave this grade to more than half of its students.

The grade given to the large number of students who performed adequately but without distinction in the 68 schools using descriptor grades was, in descending order: pass, by 55 schools; satisfactory, by seven; very good, two; good, one; acceptable, one; average, one, and expected competence, one. Two schools reported using a pass-fail grading system; therefore "pass" was the highest grade given to medicine clerks in these schools. Of these schools, the percentage of students receiving pass was 100% in one and 88% in the other. In one school, "high pass" was the highest grade awarded, whereas in two other schools, there was a grade

Table 2

Number and Percentage of 68 Medical Schools Using Descriptor Grades for Each Level of Performance, within Each Tenth-Percentile Grouping of the Clerks Given Each Type of Grade, 1986–87*

Percentile Grouping of Clerks Given Grade Type	Number and Percentage of Schools with Descriptor Grades for Each Level									
	Highest†		Intermediate‡		Midlevel		Marginal		Failure	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–10	27	40	1	1	0	0	30	44	49	92
11–20	28	41	5	7	0	0	1	1		
21–30	7	10	9	13	1	1				
31–40			5	7	6	9				
41–50			3	4	8	12				
51–60			1	1	4	6				
61–70					9	13				
71–80					18	26				
81–90					15	22				
91–100					2	3				
Not given	2	3	40	59	0	0	31	46	13	19
Unknown	4	6	4	6	5	7	5	9	6	9

*The authors surveyed medicine clerkship directors at 124 U.S. and Puerto Rican medical schools and received completed questionnaires from 101. Grades indicating the various levels of performance shown in the table were used by 68 of the 101 responding schools.

†Highest = high honors, honors, outstanding, and superior. When a grade of "pass" or other grade of nondistinction was the highest available grade, it was not included as a highest-level grade.

‡Intermediate = high pass, excellent, high satisfactory, commendation, near honors, above average, above average competency.

above honors, designated "high honors."

When no intermediate grade was given between the highest awarded and an acceptable but nondistinctive performance, the descriptor—usually called "pass"—assigned to this level of performance was awarded 80% of the time. However, when there was an intermediate grade used, this midlevel grade was used less frequently, 56% of the time.

Grades for performances below levels that were clearly acceptable were called failures (used 1.7% of the time) or some variation of the term "marginal" (3.8%). It was not always clear whether marginal was considered a passing grade or indicated that some form of remediation was required.

Discussion

The 81% rate of responses to this survey from schools throughout the country suggests that these data represent overall trends in grading in U.S. medicine clerkships. This level of response and the written comments by responding clerkship directors also suggest they have a strong desire to know what their counterparts are doing.

At the time of this study, descriptor grades were the most commonly used form of grading of medicine clerks in U.S. medical schools, being used by 68 of the 101 responding schools. However, there was a lack of consistency in the use of descriptor grades between schools. Most used a system incorporating "honors" or a similar term for the highest level of performance, "pass" or a comparable term for acceptable but nondistinctive performance, and "fail" for unacceptable performance.

The highest-level descriptor grades, most commonly called "honors," were clearly grades of distinction in most medicine clerkships. Of the 68 schools using descriptor grades, the highest grade was given to an average of 14% of the students. Only 11% of the medical schools listing descriptor grades reported rewarding more than 20% of a class with this grade designation and, of these, none gave this level of grade to more then 30% (Table 2). Essentially equal numbers of medicine clerkships awarded this grade to 1–10% and 11–20% of their classes.

The authors have observed that within the large middle group of students receiving passing grades, but without distinction, there is a subset of clerks who perform much closer to the highest level just described than do the remaining students. Without a separate grade-recognition category, there is potential for such students to blend in with the larger number of students who do not truly perform at this level. Therefore, the large group of students who pass may include those students who perform at a near-honors level, as well as those who barely pass.

In this regard, 43% (29 of 68) of the schools using descriptor grades reported using an intermediate descriptor grade between the highest-level descriptor (such as "honors") and the larger middle level (such as "pass"). Of the seven terms reported to describe this level of performance, "high pass" (55%) was most commonly used. In these schools, this level of grade was awarded to an average of 28% of students. When there was no intermediate grade, the percentage of "honors" awarded increased only

slightly to 20% from an overall frequency of 14%, but most who would have received an intermediate grade joined the larger middle pool, whose percentage increased to 80%. In other words, when an intermediate grade between an honors level and a middle level does not exist, students are more likely to receive middle-level grades than to have their grades upgraded to the next level, thereby losing any potential deserved recognition that an intermediate grade would have provided. Sixty-eight percent of the clerkship directors who had grading systems without intermediate grades between the highest level and the much larger middle group felt their students performing at this level were not being fairly recognized. Lack of recognition by a separate grade that distinguishes students from the large number below them may reduce a student's attractiveness as a potential house officer to program directors who use grades in clerkships of declared interest, among other factors, to assist in rank-ordering candidates for housestaff positions.

A middle-level grade (such as "pass") was given to more than half of the students in a class in approximately 90% of the schools using descriptor grades. The overall average number of medicine clerks receiving such a grade was 67.7%; however, as noted above, the percentage of its use is affected by whether a near-honors level of grade is used. The percentage of students receiving a middle-level grade decreased to 56% when an intermediate grade was awarded to a near-honors level of performance and increased to 80% when such an intermediate level did not exist. Only two schools awarded only "pass" or "fail" grades without delineation of other levels of performance.

Marginal and failing grades were infrequently given. Only 23 of the 68 schools using descriptor grades indicated use of a marginal grade. Various terms were used, including marginal, marginal pass, marginal fail, low pass, below expected competency, and below average. In this regard, it may even be confusing to one reviewing a transcript to know whether this grade is considered passing. Regardless, it was used only 3.8% of the time in those schools giving the grade, with only one school reporting as many as 10% of its students receiving this grade. "Failure" was given even less frequently (1.7%), with the highest number receiving this grade also being 10% in one school.

Letter grades were used by only 28 of the 100 responding schools, and only four schools used a numerical grading system. In schools using letter grades, A's were given in a frequency similar to that in effect for the highest descriptor grades, 18.9% versus 14.3%. Letter grades of A were subcategorized into A+ and A− in only three of 28 schools. Otherwise, for the most part, B, and not C, was usually comparable to the midlevel grade (passing). In only two schools did the number of C's awarded outnumber the number of B's. B's were given to 55.6% of students in schools using letter grades, compared with a passing midlevel descriptor grade given to 67.7% of students, or 56% when an intermediate, near-honors grade was used. In only five other schools were the numbers of C's even half the numbers of B's awarded. All of this suggests that, except in two of 28 schools using letter grades (7%), a letter grade of B is not synonymous with an intermediate grade between "honors" and "passing" in the descriptor grading system, but, in fact, is more comparable to a midlevel descriptor grade such as pass, satisfactory, or acceptable.

The D and F grades do appear to be comparably used as marginals or failures in the descriptor system and are used with equal frequency (D's, 4.1% versus marginals, 3.8%, and F's, 1.7 versus failures 1.7%). Combined, these account for only about 5% of students in medicine clerkships.

Recommendations

The authors believe that when the evaluation process allows sufficient discrimination of performance to identify an intermediate level of performance between the highest level of achievement and a passing grade without distinction, it should be awarded. It rewards the student by recognizing a job well done, as well as providing greater discrimination of performance for better-than-average students, who may otherwise be less easily recognized as they apply for housestaff positions.

The distributions of the same grade from one school to another can be quite different. Therefore, we believe that each school should be responsible for clearly indicating the distribution of grades in all course, but especially clerkships, such that the performances of students from different schools can be better compared. This would preferably be accomplished on a schools's transcript or as an attachment to the transcript. At the very least, information relating to courses within the student's field of interest (internship) should be included within the dean's letters.

When intermediate grades are not used, students are dependent on deans' or departmental letters to distinguish their levels of performance in clerkships related to their areas of specialty interest. Without a letter, such students, on medical school transcripts, appear to be inferior to identical students for whom grade designations exist.

In summary, the authors maintain that it would be valuable to have greater consistency in the grading systems of medical schools in the United States as well as greater delineation of grade distributions in all courses and clerkships on all medical school transcripts. Such measures would make possible a greater appreciation of a student's performance in any clerkship at any medical school.

References

1. Wagoner, N. E., Suriano, R., and Stoner, J. A. Factors Used by Program Directors to Select Residents. *J. Med. Educ.* **61**(1986):10-21.
2. Featherstone, H. J., and Ramsey, P. Analysis of Selection Criteria for Medical Residents. *Am. J. Med.* **75**(1983):687-690.
3. McNeil, M., Parker, R., Bankowitz, R., and Challinor, S. Correlates of Internal Medicine as a Residency Choice among Students at the University of Pittsburgh. *Clin. Res.* **37**(1989):811A.

hensive Review of Current Issues. *JAMA* **258**(1987):364–369.
8. *To Get Consent for a Post-What the Top Hospitals Say to Do. Res. Phys.* **13**(Aug 1967):56–65.
9. Schneiderman, H., and Gruhn, J. How—and Why—To Request an Autopsy. *Postgrad. Med.* **77**(1985):153–164.
10. Spiegel, J. S., Shapiro, M. F., Berman, B., and Greenfield, S. Changing Physician Test Ordering in a University Hospital. *Arch. Intern. Med.* **149**(1989):549–553.
11. Martin, A. R., Wolf, M. A., Thibodeau, L. A., Dzau, V., and Braunwald, E. A Trial of Two Strategies to Modify the Test Ordering Behavior of Medical Residents. *N. Engl. J. Med.* **303**(1980):1330–1336.
12. Korn, J. E., Schlossberg, L. A., and Rich, E. C. Improved Preventive Care Following an Intervention during an Ambulatory Care Rotation: Carryover to a Second Setting. *J. Gen. Intern. Med.* **3**(1988):156–160.
13. Cohen, S. J., Weiss, M. ..erger, M., Hui, S. L., Tierney, W. M., and McDonald, C. J. The Impact of Reading on Physicians' Nonadherence to Recommended Standards of Medical Care. *Soc. Sci. Med.* **21**(1985):909–914.
14. Gardner, R., Peskin, L., and Katz, J. L. The Physician, the Autopsy Request and the Consent Rate. *J. Med. Educ.* **48**(1973):636–644.
15. Katz, J. L., and Gardner, R. Request for Autopsy Consent. *N.Y. State J. Med.* **73**(1973):2591–2596.

A Comparison of the Emphasis Given to Nine Therapies in Residency Training and Later Practice of Psychiatrists

ROSS E. CARTER, Ph.D.

Abstract—This study compared the emphasis given to various therapies in six psychiatry residencies and by psychiatrists in their later practice. Eighty-seven psychiatrists and 29 residents were surveyed in 1987. The two groups reported that almost the same amounts of time of their respective training programs had been devoted to the nine therapies surveyed. Patterns of practice were observed, including the finding that those who were highly trained in a therapy practiced it more than did those who had less training. Both those who were highly trained and those who were not extended their practices to the use of therapies in which their training was not extensive. Problems in the study design and variables affecting this type of research are identified as guidance for future investigations. *Acad. Med.* 65(1990):649–652.

The relation between residency training and later practice is difficult to assess. The physician's intervening experiences confound the effects of his or her early training, hindering efforts to show causal links. This difficulty is particularly great when assessing the impact of psychiatrists' training. Even though the field has been defined as diverse,[1,2] the main activity of psychiatrists is the practice of psychotherapy,[3] a process that is difficult to define in standard terms because it is carried out in a wide variety of ways by practitioners. Few data exist to show how the practice of psychiatry is affected by the amount of therapy training in residency, the type of residency program, or continuing education.

Dr. Carter is associate professor, Department of Psychiatry and Mental Health Sciences, Medical College of Wisconsin, Milwaukee.

Correspondence and requests for reprints should be sent to Dr. Carter, Department of Psychiatry and Mental Health Sciences, Medical College of Wisconsin, 3521 N. Prospect Avenue, Milwaukee, WI 53211.

Method

Psychiatrists who graduated from six U.S. psychiatry residency programs between 1976 and 1987, and the psychiatry residents in the same programs, were contacted in 1987 through their programs' training directors.[4] A total of 294 psychiatrists and 116 residents were mailed a questionnaire; usable replies were returned by 87 (29.6%) of the psychiatrists and 29 (25%) of the residents.

The questionnaire requested demographic information and inquired about each physician's current practice and residency training. Each respondent was asked to rate the amounts of time during his or her residency training devoted to nine therapies (see Table 1) and the amounts of his or her current practice in which the same therapies were offered. The responses were obtained through a format based on a linear analog technique adapted from that of Karon and O'Grady,[5] which allows the expression of subjective impressions and results in linear measures.[6]

Results

The psychiatrists reported a mean length of practice of 4.06 years (SD = 10.2), extensive continuing education, and a mean of 14.8 hours of therapy per week (SD = 11.6) in treating patients within a typical age range of 18–50 years and with nearly equal numbers of inpatients and outpatients. The residents reported slightly fewer therapy hours spent in treating patients within the same age range; however, 84% of their patients were outpatients. Both groups re-

Table 1

Significance Levels for Differences in Amounts of Time Spent in Practice of Each of Nine Therapies by Psychiatrists (P's) and Residents (R's) with the Highest and Lowest Levels of Training in Each Therapy, 1976–1987*

Therapy	Psycho-pharma-cology		Somatic		Consul-tation/ Liaison		Community Psychiatry		Marital		Family		Classic/ Analytic		Group		Psycho-dynamic	
	P's	R's	P's	R's	P's	R's	P's	R's	P's	R's	P's	R's	P's	R's	P's	R's	P's	R's
Psychopharmacology	.001	.001	.01	—	.01	.04	—	—	—	—	—	—	—	—	—	—	—	—
Somatic	.04	.02	.001	.002	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consultation/liaison	.03	.02	.001	.03	.01	.03	—	.05	—	.03	.004	—	.04	—	—	.02	—	.03
Community psychiatry	.001	.01	—	—	.02	.04	.003	.01	—	—	.007	—	—	—	.02	—	—	—
Marital	—	—	.02	—	.04	—	—	—	.001	.003	.001	.02	.006	—	.03	—	.001	.02
Family	—	—	—	.02	.006	.04	—	—	—	.002	.001	.02	.04	—	.001	—	.05	—
Classic analytic	—	—	.05	—	—	—	.01	—	.007	—	.006	.05	.004	.01	.02	—	—	.01
Group	—	—	—	—	—	—	.04	—	—	—	—	—	.01	—	.004	.01	—	—
Psychodynamic	—	—	—	—	.05	—	.001	—	—	—	—	—	—	.03	—	—	.004	.001

*The author sent questionnaires to 294 psychiatrists who graduated from six U.S. psychiatry residency programs between 1976 and 1987, and to the psychiatry residents in the same programs when the study was carried out in 1987. The questionnaire inquired about each physician's current practice and residency training in terms of the amounts of time devoted to nine therapies. Student's *t*-test was used to calculate the differences between the amount of time each therapy was practiced by the physicians with the lowest level of training and the amount of time each therapy was practiced by those with the highest level of training. Only the comparisons that showed a significant difference are shown in the table.

ported, in decreasing order, the same preferences for the following categories of therapy: individual, family, marital, and group.

For all nine therapies, the amounts of training and practice were highly correlated ($p < .001$ to .002) for both the psychiatrists and the residents. Both groups reported the greatest amount of their training and practice in psychopharmacology and psychodynamic therapy; the least in group, analytic, and marital therapy.

The author classed the responding physicians into three groups (low, middle, and high) according to the amount of training each reported in each therapy. Differences in the amounts of time devoted to the therapies in practice by those in the high and low groups were compared using Student's *t*-test. Only the comparisons that showed a significant difference are shown in Table 1.

For both the psychiatrists and the residents, those reporting more training in a particular therapy practiced that therapy more than did those with less training. Differences were also found between the most- and the least-trained groups in several related areas. Of the 39 significant differences between the most- and least-trained psychiatrists, 19 were also observed between the high and low groups of residents, as indicated in Table 1.

Amounts of training were compared according to residency programs using a one-way analysis of variance. The resulting *F* values were significant ($p < .001$) for all areas except consultation/liaison and marital therapy, indicating that the residencies differed in types and amounts of training. Further comparisons were made using the Newman-Kuels method.[7] These resulted in only one residency's being rated as comprehensive, with others rated as having high and low areas of strength and as being divided between biological and nonbiological therapies.

Discussion

The data suggest "specialist/generalist" practices organized not only

around areas in which the physicians had had extensive training but also around other therapies in which they had experienced less training. For example, those with extensive training in somatic therapy practiced it as "specialists" but also practiced, as "generalists," other forms of therapy in which they were less trained. However, those who had had less training in somatic therapy but practiced it as generalists spent less time conducting this therapy than did the specialists in it. This relation was found consistently among both the psychiatrists and the residents who reported the highest and lowest levels of training in the therapies surveyed.

Consistency in residency education over time is suggested by the correspondence between the amounts of training and practice given to particular therapies by the responding physicians. The finding that both the residents and the psychiatrists practiced more in areas in which they were more extensively trained supports the truism that one does what one has learned to do. The strength of the relation between the amount of training and the practice time devoted to a therapy, however, indicates the primacy of residency education. It does not appear that the psychiatrists sought out continuing education in areas of weakness and then, with improvement, increased the time devoted to practicing those areas. Instead, the proportion of practice time devoted to a therapy appears to have been similar to the proportion of time devoted to it during the residency.

The fact that the psychiatrists did not limit their practices to therapies in which they were extensively trained suggests that other, nontraining, factors also influence practice. These are unknown but may include situational demands and the availability of alternate treatment sources.

Another dimension is that of the extent to which biological or nonbiological therapies are practiced and the difference in the extents of the spread of practice into related therapies. Those with extensive training in biological therapies tended to restrict their practices to biological therapies. In contrast, those with extensive training in nonbiological therapies practiced both biological and nonbiological ones. These findings suggest that psychiatrists and residents tend to specialize in either a biological therapy or a nonbiological therapy, with crossover occurring particularly for those practicing nonbiological therapy.

The data also support the generally held assumption that different residencies emphasize different areas of training. Of greater importance is that little or no training in certain areas was reported. One residency was rated extremely low in six areas of therapy; two were extremely low in four areas. Only one residency appeared to be "midstream" and to offer either a moderate or a high amount of training across all the areas of therapy surveyed. What problems this imbalance in training will cause in reaching the goal[8] of graduating psychiatrists with a variety of experience and with competencies in a number of areas remain to be seen.

In further research, attention should be given to the following approaches and variables, which the present study found were important. First, more accurate measures of the amount and type of continuing education and its effect on practice are needed. Second, the past and current emphasis given in a particular residency to therapy training should be assessed to account for change over time. Third, attention is needed regarding how residents' bias shapes what is learned and which residency is selected. Fourth, the availability of alternative sources of treatment and the types of patients referred should be assessed in order to gain more data on how psychiatrists extend their practices into different areas of therapy.

References

1. Langsley, D. G., and Hollender, M. H. The Definition of a Psychiatrist. *Am. J. Psychiatry* **139**(1982):81–85.
2. Langsley, D. G., and Yager, J. The Definition of a Psychiatrist: Eight Years Later. *Am. J. Psychiatry* **145**(1988):469–475.
3. Carter, R. Training General Psychiatry Residents in Family Therapy: Some Effects and Perspectives. *J. Psychiatr. Educ.* **9**(1985):159–167.
4. Robinowitz, C. B., Kay, J., and Taintor, Z., eds. *Directory of Psychiatry Residency Training Programs.* 3rd ed. Washington, D.C.: American Psychiatric Press, 1986.
5. Karon, B., and O'Grady, P. Quantified Judgments of Mental Health from the Rorschach, TAT and Clinical Status Interviews as Means of a Scaling Technique. *J. Consult. Clin. Psychol.* **34**(1970):229–235.
6. Remington, M., et al. Comparative Reliability of Categorical and Analog Rating Scales in the Assessment of Psychiatric Symptomology. *Psychol. Med.* **9**(1979):765–770.
7. Weiner, B. J. *Statistical Principles in Experimental Design.* New York: McGraw-Hill, 1962, pp. 85–89.
8. *Essentials of Accredited Residencies.* Accreditation Council for Graduate Medical Education. Chicago, Illinois: American Medical Association, 1987.